

Claims

[c1]

Claim 1:

A modular electronic device where non-direct electrical contact (non-contact) mechanisms are used for inter-module communication, and where modules are attached forming an extendable structure with extendable function.

[c2]

Claim 2:

A modular device as in Claim 1 where non-direct electrical contact control mechanisms are used.

[c3]

Claim 3:

A modular electronic device where non-direct electrical contact control mechanisms are used, this is an independent claim.

[c4]

Claim 4:

A modular device as in Claim 1 where inter-module power is distributed using magnetic induction/transformer action.

[c5]

Claim 5:

A modular device as in Claim 1 where modules are liquid filled for cooling.

[c6]

Claim 6:

A modular device as in Claim 1 where modules are liquid filled for withstanding a high-pressure environment.

[c7]

Claim 7:

An electronic device packaged inside of a fluid filled enclosure (case) for withstanding a high pressure environment. This is an independent claim.

[c8]

Claim 8:

A modular device as in Claim 1 where inter-module power is distributed using a non-contact power distribution mechanism.

[c9]

Claim 9:

A modular device as in Claim 1 where the modules are sealed.

[c10]

Claim 10:

A modular device as in Claims 1 where devices are internally powered.

[c11]

Claim 11:

A modular device as in Claim 1 where power is distributed through direct electric power interconnects.

[c12]

Claim 12:

A modular device as in Claim 1 where alignment mechanisms and retention mechanisms are used to align and attach modules.

[c13]

Claim 13:

A modular device as in Claim 1 where alignment mechanisms are used as a transformer core.

[c14]

Claim 14:

A modular device as in Claim 1 where alignment mechanisms are used to improve the efficiency of non-contact power distribution mechanisms.

[c15]

Claim 15:

A pointer used with a modular device as in Claim 2 that contains an non-contact control source that acts as a non-contact control mechanism.

[c16]

Claim 16:

A device used with a modular device as in Claim 2 that redirects/channels a non-contact control source energy that originates from within a module and acts as a control mechanism.

[c17]

Claim 17:

A system comprised of a plurality of devices described in Claim 1 and preceding Claims as they comprise a failure resistant extendable methodology for building robust electronic systems.

Abstract of Disclosure

[0099] A modular electronic device where (predominantly) sealed modules are aligned and attached/connected in pre-determined sequences, forming a robust block-like structure with extendable function: Control and/or inter-module communication are implemented without direct electrical interconnect, by non-contact means such as (magnetic, inductive, light, infrared, radio frequency, sound, ultrasound, or other non-contact means). This device's inter-module power transfer may be with or without direct electrical contact, or devices may be internally powered. Power transfer through inductive/transformer action where one or more alignment pins are used as transformer core is one potential implementation. Modules may be fluid filled to facilitate cooling and/or crush resistance to high-pressure environments.